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MULTIPLE LEVER MANUAL TONE CHANGER FOR GUITARS

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2 Sheets-Sheet 1

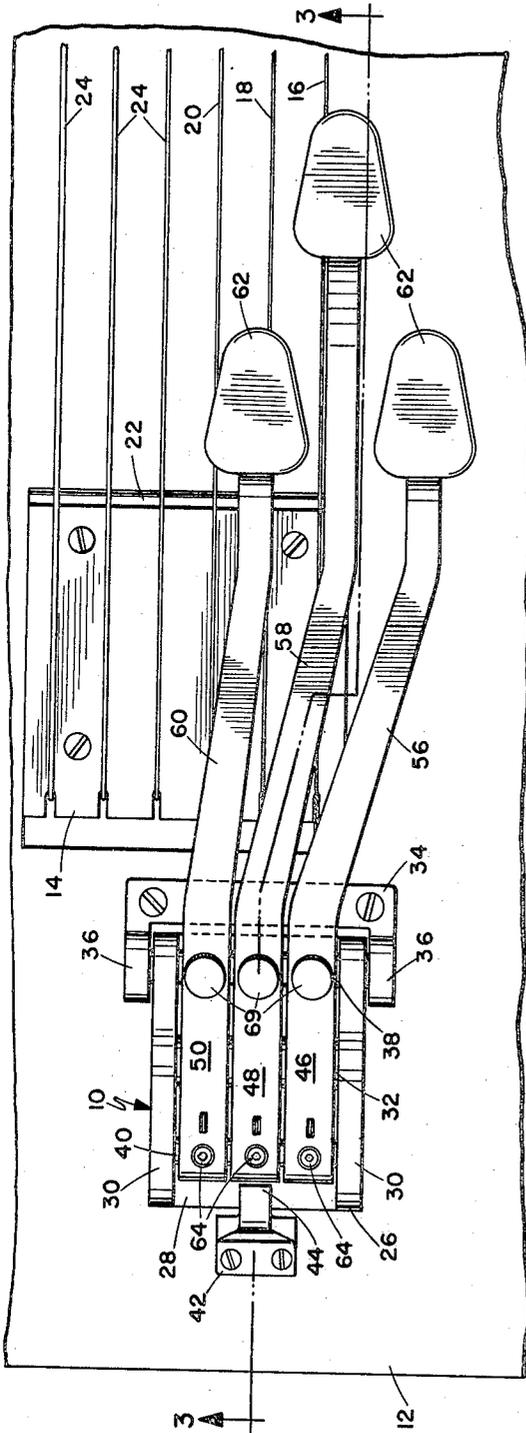


Fig. 1

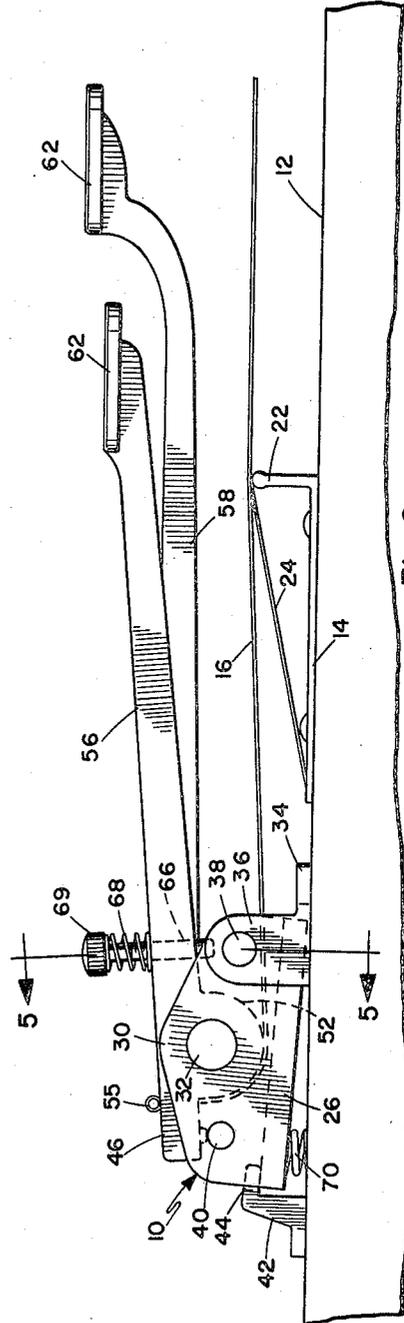


Fig. 2

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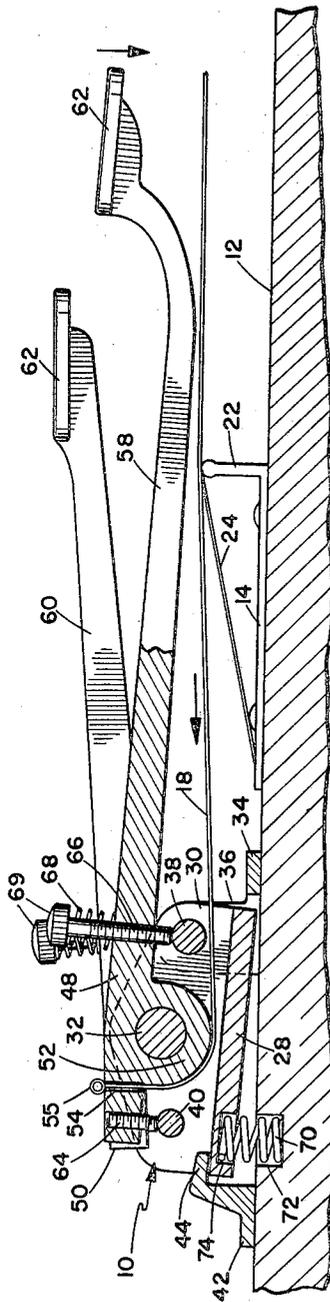


Fig. 3

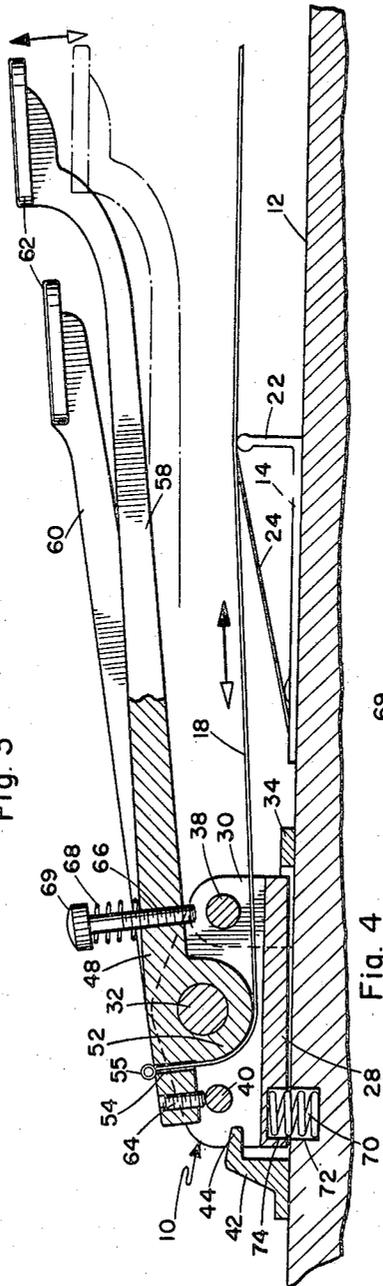


Fig. 4

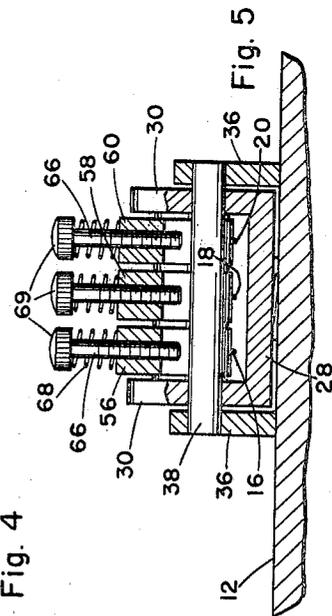


Fig. 5

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MULTIPLE LEVER MANUAL TONE CHANGER FOR GUITARS

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6 Claims

ABSTRACT OF THE DISCLOSURE

The unit is an attachment adaptable to most guitars, or similar stringed instruments, to provide individual or combined tonal changes of several strings while playing. Each variable string has an individual control lever while is adjustable for a precise tone change, the levers being grouped for convenient operation by the player's hand in the string picking position and being adjustable individually to comfortable positions in the group. In addition the entire lever assembly is operable by one lever for a vibrato effect, without any adjustment of the individual tone changing action.

BACKGROUND OF THE INVENTION

The present invention relates to musical instruments and specifically to a multiple lever manual tone changer for guitars and like stringed instruments.

Many different types of tone changing devices have been used on guitars, the most common being a rocking lever mechanism which provides a vibrato action on all the strings collectively. The degree of vibrato depends on the motion of the lever and is not precise. Tone changing mechanisms for individual strings are also well known and permit precise control of the tone change. When these devices are foot pedal operated, this necessitates a fixed or very restricted playing position for the guitar.

SUMMARY OF THE INVENTION

The unit described herein attaches directly to the body of a hand held guitar adjacent the tailpiece and is connected to selected strings to provide a tone change action comparable to that of a pedal operated guitar. The control levers of the unit are extended and have end pads which are conveniently grouped to be engaged by the palm of the player's hand in the string picking position. By appropriate hand pressure the individual levers, or any combination of levers can be depressed while playing. Each lever has means for precise adjustment of the tone change and for adjustment of the height of the hand engaging pads above the guitar body, so that the grouped levers can be positioned in a comfortable arrangement for the individual player's hand. In addition to the individual tone changing, all the selected strings are movable collectively for a vibrato effect by operating one lever, the tone change and vibrato being instantly operable at any time during playing without any adjustments of the mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a top plan view of the complete unit mounted on a guitar;

FIGURE 2 is a side elevation view of the structure of FIGURE 1;

FIGURE 3 is sectional view taken on line 3—3 of FIGURE 1, but showing one lever depressed;

FIGURE 4 is a sectional view similar to FIGURE 3, but showing the vibrato action; and

FIGURE 5 is a sectional view taken on line 5—5 of FIGURE 2.

Similar characters of reference indicate similar or identical elements and portions throughout the specification and throughout the views of the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

For purposes of illustration the unit 10 is shown mounted on the body of a guitar, shown fragmentarily at 12, adjacent the tailpiece 14 to which the strings are anchored. A conventional six string arrangement is indicated and the unit is connected to the first, second and third strings, respectively numbered 16, 18 and 20. The tailpiece 14 and bridge 22 are typical and may vary considerably, the unaffected strings 24 remaining attached to the tailpiece or other conventional anchorage in the normal manner.

Unit 10 comprises a frame 26, generally U-shaped in cross section, with a flat base plate 28 and vertical sides 30. Fixed transversely across the center of frame 26 between sides 30 is a rocker pin 32, spaced above and parallel to the base plate 28. Fixed to the guitar body 12 adjacent the rear end of tailpiece 14 is a bracket 34 having upright side posts 36, with a hinge pin 38 secured between the posts. Frame 26 is pivotally mounted at its forward end on hinge pin 38, which passes through sides 30, the frame extending rearwardly from the bracket 34 on the opposite side from tailpiece 14. At the rear end of frame 26 is a rest bar 40 fixed between sides 30, the rest bar, rocker pin 32 and hinge pin 38 all being substantially parallel. Upward swinging motion of the frame 26 is limited by a retaining stop 42 fixed to guitar body 12 and having a projecting tongue 44 which engages the rear edge of base plate 28.

Mounted on rocker pin 32 are three rocker arms 46, 48 and 50, which are longitudinally aligned with the respective strings 16, 18, and 20. Each rocker arm has a generally semi-cylindrical drum portion 52 below rocker pin 32, and the respective string passes under and around the drum portion, then upwardly through a small hole 54 to the upper surface of the rocker arm, where the string is anchored by the conventional end retainer 55. Extending forwardly from the rocker arms 46, 48 and 50 are levers 56, 58 and 60, respectively, the levers passing above tailpiece 14 toward the normal position of the string picking hand. As illustrated the center lever 58 is longer than the other two and each lever has an end pad 62 on the upper surface for engagement by the player's hand. While the exact positioning of the levers and grouping of the pads 62 may vary somewhat, the staggered triangular grouping shown has been found particularly effective, since the player can readily depress any lever or combination of levers by appropriate rocking of the palm of the hand resting on the pads. At the rear end of each rocker arm is a setting screw 64 threaded vertically through the bar and projecting below to rest on rest bar 40. String tension will hold the setting screws firmly on the rest bar and the screws can be adjusted to set the heights of the individual levers above the guitar body. In FIGURE 2 the pad of center lever 58 is shown slightly higher than the others, this being a comfortable arrangement to suit the normal playing position of the hand.

Depression of any lever will increase the tension and so raise the tone of the string connected to that lever. To provide precise control of the tone change each rocker arm has a stop screw 66 extending through the arm forward of rocker pin 32 and positioned above the hinge pin 38. When a particular lever is depressed, its stop screw 66 will strike the hinge pin 38 and stop the motion, the projection of the stop screw below the rocker arm determining the amount of motion and the resultant tone change. Thus each lever can be individually set by its stop screw 66 to obtain a half tone, full tone, or one and a

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half tone change, which are the normally used tone changes. The changes need not be the same on all levers, the various combinations allowing a wide variety of chords to be played without the usual intricate fingering on the frets. Each stop screw 66 has a drag spring 68 fitted between the rocker bar and the screw head 69 to hold the screw frictionally in any set position.

Under the rear end of frame 26 is a compression type load spring 70 which seats in a socket 72 in guitar body 12 and a socket 74 in base plate 28. The spring 70 holds the frame upwardly on retaining stop tongue 44 against the tension of the strings. Since the lever arm representing the effective line of tension of the strings relative to the axis of hinge pin 38 is quite small, compared to the lever arm from the hinge pin axis to the load spring 70, the load spring need not be unduly strong. It will be evident that by lifting up on any one of the levers, the rear of frame 26 will be pushed down against spring 70. The other levers will follow due to the string tension, so that tension is reduced on all strings simultaneously. Thus fluctuation of the levers by this action, indicated by the two positions in FIGURE 4, will provide a vibrato effect, distinct from the preset upward tone changes. In normal playing only the thumb and first two fingers are used to pick the strings, so the lever 18 can readily be lifted by hooking the fourth finger underneath, to provide the vibrato effect. This does not interfere with normal playing or the individual tone changes of the strings and the various effects can be used instantly at any time, without any significant change in grip or hand position. Due to the long effective lever arm of lever 58, little effort is needed to overcome spring 70 and this is assisted by string tension, as distinct from the action of the usual vibrato lever which is depressed to increase the tension on all strings simultaneously.

Upon initial installation of the unit on a guitar the strings are tightened sufficiently to hold the rocker arms down on rest bar 40. Setting screws 64 are then adjusted to position the levers at the required heights above the guitar body, after which the strings are tuned in the normal manner. The levers are then individually depressed and their respective stop screws 66 adjusted to set the required tone change in each string. Once set in this manner the normal tuning will remain constant and the applied tone changes will be consistent. The maximum range of vibrato is governed by the height of tongue 44 above the guitar body, any fluctuation less than maximum being controlled by the player's motion of the levers.

The simple compact unit combines the features of the conventional vibrato mechanism and the selective pre-set tone changes of several strings, normally accomplished only on a pedal actuated guitar. Yet the guitar equipped with the present unit is fully portable for hand held playing and the unit does not interfere with normal playing techniques.

We claim:

1. A tone changer unit for a guitar or like stringed instrument having a body and a tailpiece to which the strings are secured at one end, the unit comprising:

- a frame having means for attachment to the guitar body adjacent the tailpiece;
- a plurality of rocker arms mounted in said frame sub-

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stantially in individual longitudinal alignment with certain of said strings, and being pivotal to rock about an axis transverse to the strings, each of said rocker arms having the correspondingly aligned string secured thereto and passing partially around the pivotal axis, whereby the effective tension of the string is changed by motion of the rocker arm;

stop means on each of said rocker arms, said stop means being individually adjustable to limit the rocking motion of each rocker arm;

each of said rocker arms having an integrally formed lever, the levers extending substantially longitudinally along the body from said frame to a position closely adjacent to the normal position of the player's hand for picking the strings and having end portions grouped for simultaneous and selective engagement by the player's hand in the string picking position.

2. The structure of claim 1, wherein said lever end portions are staggered longitudinally of the levers to facilitate individual manual operation.

3. The structure of claim 1, wherein said means for attachment comprises a bracket fixed to the body, one end of said frame being pivotally connected to said bracket on an axis substantially parallel to the pivotal axis of said rocker arms with the frame extending from the bracket in opposition to the strings;

and a retaining stop engaging said frame to limit the pivotal motion thereof.

4. The structure of claim 3 and including a load spring between said frame and the body remote from the pivotal axis of the frame and biasing said frame upwardly from the body against the tension of the strings;

said retaining stop engaging the free end of said frame and limiting the upward motion thereof, while allowing downward motion of the frame against said load spring.

5. The structure of claim 4 and including a hinge pin on which said frame is pivotally attached to said bracket; said stop means including an adjustable stop screw in each of said rocker arms on the lever side of the rocker axis, said stop screw projecting below the rocker arm to engage said hinge pin when the particular lever is depressed by an amount predetermined by the setting of the stop screw.

6. The structure of claim 5, wherein said stop means further includes a setting screw in each of said rocker arms on the side of the rocking axis remote from the lever, said frame having a rest bar portion against which said setting screws are normally held by string tension.

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